Bruce (Shidi) Xi

(236)-777-8218 • brucexi99@outlook.com • bruce-shidi-xi
brucexi999

Education

The University of British Columbia **Vancouver, BC**
Master of Engineering in Electrical and Computer Engineering *2021–2024*
- Research project: Concurrent IC Global Routing with Multi-Agent Deep Reinforcement Learning
- Relevant courses: Deep Learning, ML Hardware Accelerator, Computer Architectures, Digital Hardware Design, Embedded Systems, VLSI, IC Testing and Reliability

Imperial College London **London, UK**
Bachelor of Engineering in Materials Science and Engineering *2018–2021*
- Graduated with First-Class Honours
- Obtained Dean's List for three consecutive years (2018-2021)

Project

Concurrent IC Global Routing with Multi-Agent Deep Reinforcement Learning **May-Oct. 2023**
- Demonstrated initiative by independently mastering DRL and IC global routing through exhaustive self-study and comprehensive literature review
- Designed an innovative multi-agent DRL framework to address the IC global routing challenge in a concurrent manner
- The proposed work guaranteed 0 overflow and outperformed an A* baseline by 2.6% in terms of wirelength

Embedded System Design **Jan.-Apr. 2023**
- Designed key components of an embedded system including a 4-way set-associative cache controller and a DRAM controller using Verilog. The cache reduced the runtime of a benchmark by 43%
- Implemented the system on an FPGA with a provided soft microcontroller
- Developed software and firmware in C that interacted with hardware using SPI, IIC, and CAN protocol
- Utilized hardware timer interrupt and designed a snake game software that ran on the embedded system

CPU Architecture Design **June-Sept. 2022**
- Architected a 16-bit RISC CPU from the ground up using Verilog, integrating pivotal components such as FSM, datapath, RAM, and I/O interfaces
- The CPU supported 13 diverse instructions encompassing ALU operations, memory access, and branching mechanisms
- Successfully deployed the system onto an FPGA and validated the design's capabilities by executing a test program

Experience

Motorola Solutions **Vancouver, BC**
Design Validation Co-op *May-Dec. 2022*
- Conducted extensive camera tests, ensuring precision both in lab settings and office environments
- Developed Python-based software, realizing test automation and data analysis, resulting in a significant enhancement in test efficiency. Some tests achieved automation of up to 90%
- Collaborated effectively within a team framework, leveraging tools like Git and Jira for optimal workflow management

University College London **London, UK**
Undergraduate Research Assistant *June-Aug. 2021*
- Played an integral role in the research team by meticulously taking measurements and preparing samples
- Demonstrated analytical skills by independently evaluating vast datasets and presenting insights effectively to the research group, fostering informed decision-making

Skills

Hardware: Verilog, FPGA, Modelsim, Quartus, Cadence

Software: Python, C, Assembly, Linux, Git, GitHub

Research: LaTeX, Academic and Technical Writing, Mendeley